SANDIA LABNEWS
PUBLISHED SINCE 1949

Vol. 73, No. 13, July 16, 2021

DOE award to boost clean energy **Page 2**

New weapons testing capability produces richer data, saves time, cost

FLIGHT SIMULATION — The Sandia Superfuge/Centrifuge Complex aims to provide the most realistic flight simulation environments possible. **Photo by Randy Montoya**

Superfuge test combines multiple environments on a full-scale weapons system

By **Paul Rhien**

A team of Sandia engineers developed a new testing capability in support of the Labs' nuclear weapons mission. The team completed their first combined-environments test on a full-scale weapons system at the Sandia Superfuge/Centrifuge Complex in Albuquerque.

In a successful test, weapons engineers simulated three environments — acceleration, vibration and spin — simultaneously on an experimental test system built by Sandia and used in collaboration with Lawrence Livermore National Laboratory.

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Imaging tool under development exposes concealed detonators — and their charge

By **Troy Rummler**

Behold the neutron, the middle child of subatomic particles. At times overshadowed by its electrically charged siblings the proton and the electron, neutrons quietly play important roles in national security. They start nuclear reactions for weapons and power plants. They bombard materials for nuclear safety tests. And now they have a new skill: telling whether a concealed, electric detonator is charged.

Sandia quantum-sensing expert Yuan-Yu Jau is helping neutrons develop their talent. He's leading an effort to build a new kind of neutron-based imaging system. When finished, it will enable people to safely examine sealed metal boxes

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PICTURE THIS — Sandia researchers, from left, Yuan-Yu Jau, George Burns, Justin Christensen and Ed Bielejec plan to test a future neutron generator for an electric-field imaging system at Sandia's Ion Beam Laboratory, pictured here. **Photo by Randy Montoya**

SANDIA LABNEWS
PUBLISHED SINCE 1949
Managed by NTESS LLC for the National Nuclear Security Administration

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Sandia National Laboratories is a multimission laboratory managed and operated by National Technology & Engineering Solutions of Sandia, LLC, a wholly owned subsidiary of Honeywell International Inc., for the U.S. Department of Energy's National Nuclear Security Administration under contract DE-NA0003525.

Published on alternate Fridays by Internal, Digital and Executive Communications, MS 1468

LAB NEWS ONLINE: sandia.gov/LabNews

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LABNEWS Notes

EDITOR'S NOTE: We've stopped printing the *Lab News*, but will continue to publish every two weeks. We want you to remain in our community of readers, so please send your comments and suggestions for stories or for improving the paper. *Lab News* welcomes guest columnists who wish to tell their own "Sandia story" or offer their observations on life at the Labs or on science and technology in the news. If you have a column (500-800 words) or an idea to submit, contact *Lab News* editor Katherine Beherec at kgbeher@sandia.gov.

DOE awards funding to boost clean energy commercialization

CLEAN ENERGY ASSISTANCE — Sandia's Brandon Ennis holds a carbon fiber plank, a new material that could bring cost and performance benefits to the wind industry. DOE recently awarded funding that will enable Sandia researchers to work with more companies developing clean energy technologies. **Photo by Randy Montoya**

By **Manette Newbold Fisher**

Sandia is partnering with New Mexico State University, Los Alamos National Laboratory and the New Mexico Economic Development Department to create a new pipeline for energy technology to reach the market using funding from the Department of Energy.

DOE awarded $1 million in Energy Program for Innovation Clusters funding to the regents of New Mexico State University in June. The funding will be used by the university to work with regional stakeholders on new programming through the New Mexico Clean Energy Resilience and Growth Cluster. Together, the university's Arrowhead Center technology transfer office, Sandia and Los Alamos national laboratories and the New Mexico Economic Development Department plan to help startups commercialize clean energy technologies.

"This funding builds on already established partnerships to heighten the impact Sandia researchers have outside the labs, which in turn will strengthen the economy and enable the private sector to press forward in solving challenging issues," said Mary Monson, Sandia senior manager of technology partnerships and business development.

NM CERG will be established as a regional engagement strategy that supports New Mexico clean energy tech companies in developing hardware and software to meet growing demands for clean and renewable energy sources and technologies.

"We will create a pipeline of support for these startups, solidifying New Mexico's role in the clean energy economy and support the commercialization of technologies that have global impacts. We can't wait to get started," said Dana Catron, director of strategic operations at the Arrowhead Center and project director for NM CERG.

The Arrowhead Center will provide education and support to startup businesses, while the New Mexico Economic Development Department will support cluster expansion and promotions. Sandia and Los Alamos national laboratories will provide expertise, programming, online training and support to New Mexico businesses working to commercialize technologies developed by the companies or transferred from the labs.

When companies are matched with the labs through NMSU, the labs will utilize the New Mexico Small Business Assistance program and the Technology Readiness Gross Receipts Initiative to provide mentorship, technology validation, prototyping, production assistance, testing and design services. The Sandia Labs C3 space in downtown Albuquerque will also be available for NM CERG to use for meetings and events.

NMSU has partnered with Sandia in the past and has been able to connect the labs with small businesses facing technical problems.

"We look forward to expanding our efforts with NM CERG. When we help companies take clean energy technologies to the marketplace, the state benefits from additional job opportunities, as well as stronger economic and climate security," said David Kistin, Sandia manager of technology and economic development.

According to a DOE news release, the funding announcement is the second of a two-part program created by DOE's Office of Technology Transitions — in collaboration with DOE's Building Technologies Office, the Arctic Energy Office, and the Office of Electricity — to support robust energy innovation ecosystems and stimulate energy hardware development in regions across the United States. Last year, DOE awarded $1 million to 20 incubators and accelerators across the nation.

Sandia awarded $2 million to work with energy companies in other states, UK

In addition to funding that will establish NM CERG, the DOE Office of Technology Transitions Technology Commercialization Fund awarded Sandia $2 million in public and private funding to boost commercialization of promising energy technologies.

Twelve national laboratories received commitments from private sector partners to match at least 50% of the anticipated federal funding. DOE provided $30 million in federal funding that was matched by more than $35 million in private sector funds for 68 projects that will accelerate the commercialization of promising energy technologies.

Sandia will use its funding to work with companies in New Mexico, Massachusetts, Michigan, New York and the United Kingdom on projects that include alkaline water electrolysis, improved power converters for microgrids, robotics for the optimization of wind energy generation, among others.

Concealed detonators

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when opening them could be dangerous, whether that's because inside is an explosive weapon or a malfunctioning, high-voltage fire set at a missile range.

"There are no other technologies that can directly image an electric field with physical barriers," Yuan-Yu said. "One advantage of this imaging technology is that it can absolutely determine the magnitudes and directions of the electric fields."

Yuan-Yu has already shown neutrons are up to the task at a large, specialized facility — the National Institute of Standards and Technology Center for Neutron Research in Gaithersburg, Maryland. He is currently exploring how to redesign the system into a smaller, fieldable prototype for security applications.

Compact neutron generators are commercially available for laboratory, medical and industrial uses, but by and large, these spit out neutrons with so much energy that the imaging system cannot manipulate and analyze them. Yuan-Yu is working toward building a custom generator that tosses neutrons with much lower energies.

The National Nuclear Security Administration is funding his efforts.

Neutron spin exposes electric fields

A metal box, or Faraday cage, blocks electromagnetic waves attempting to enter or exit. This conceals electrically charged devices inside and makes contents difficult to probe without opening the box. Charged particles like protons and electrons have trouble penetrating the barrier, which gives neutral neutrons the opportunity to shine.

Neutrons pass through metal with relative ease, and although they don't have an electric charge, they do spin. That spin changes ever so slightly when the particle passes through an electric field. Yuan-Yu takes advantage of this phenomenon by polarizing neutrons so they all have the same spin and firing them through a metal box into a detector on the other side.

Some of the neutrons will never make it to the detector because they bump into the concealed object. The neutrons that make it create an X-ray-like silhouette on the detector. Of these particles, any that also pass through an electric field will have a different spin when they hit the detector than when they started. This creates a second image that shows where electric fields are. From that picture, operators can decipher the voltage of the object and whether it's charged, even if it is turned off or in sleep mode.

According to Yuan-Yu, neutrons also could be used in similar ways for other applications. They could be used to study electrical properties of new materials, analyze storage capacity in advanced batteries or diagnose electrical components of complex, assembled machines without removing them.

"In practice, different applications require different electric-field sensitivity and imaging resolution," Yuan-Yu said. "It doesn't mean that our proof-of-concept demonstration is ready for all applications. Several of them can already be done using the demonstrated experimental setup, but some others require further improvements in performance or in fieldable technologies."

In other words, the mighty neutron might have more surprise talents to show off in the future.

Sandia presents monsoon and lightning awareness resources to workforce

By **Dan Ware**

Every year, New Mexicans look forward to the break in summer heat that the annual monsoon season brings.

Typically happening between early July and the end of September, the monsoons bring vital moisture to our high desert climate. But with the monsoons comes risk of severe flooding and lightning.

Sandia's Emergency Management office and meteorology program recently hosted a presentation about monsoon season awareness and safety, which is now available on the ES&H homepage.

Monsoonal downpours happen very quickly and saturate the ground, which causes a lot of water to run off and creates hazardous flash flood conditions on streets and arroyos. The stormwater generated by the downpours picks up debris, waste, oil and chemicals from the street and deposits them in open water, like rivers and lakes, and jeopardizes water quality. Monsoonal storms that form quickly generate down drafts and potentially destructive straight-line winds that put additional lives and property at risk.

In addition to destructive flooding and winds, a single monsoonal storm can produce hundreds of lightning strikes. According to the National Weather Service, lightning has accounted for an average of 58 deaths a year in the United States over the last decade.

"While it's hard to predict just how much rain or lightning we'll get during any given monsoon season in New Mexico, the danger of severe storms is very real and we all have the responsibility to be prepared," said Sandia Meteorologist Joe Fontana. "It's important

DANGEROUS WATERS — An arroyo floods in Albuquerque along westbound I-40.
Photo courtesy of Sandia Meteorology

RISING TIDE — A road floods at Sandia. **Photo courtesy of Sandia Meteorology**

ON THE MOVE — A portable tower used by the Meteorology program collects weather data at the Lab. **Photo courtesy of Sandia Meteorology**

FLASH — Lightning strikes Albuquerque's West Mesa. **Photo by Randy Montoya**

for everyone to know, whether they are working here on-site or from their home office, no place outside is safe when thunderstorms roll into their area."

When it comes to monsoon season, there are many safety tips to keep in mind, but one of the most important is that if you hear thunder, lightning is close enough to strike, and it is urgent that you take shelter indoors until the storm passes. During the storm, avoid corded phones, computers and other equipment that puts you in direct contact with electricity.

If you are caught outside during a downpour, stay out of ditches and arroyos, which can fill quickly with raging water. Driving through flooded roadways can damage your vehicle, and fast-moving water can carry vehicles off. More information is available on the National Weather Service website.

"Typically, monsoonal storms spring up in the mid to late afternoon when we reach our peak heat for the day," Joe said.

"When they do remember two things: 'when you hear thunder roar, stay indoors,' and 'turn around, don't drown' if you see flooding on the roads."

Sandia's meteorology program serves the Labs by sampling and studying local meteorological data, atmospheric conditions and lightning activity across the New Mexico site. According to Joe, work is currently underway to enable the program to monitor similar data from Sandia's California site as well.

The program's website provides links to data and forecasting information that can be accessed by employees prior to planning and performing outdoor work on-site or in the field. Through the website, employees can submit a request to program staff for specialized assistance or support for large-scale outdoor tests and operations.

To assist with managing severe weather incidents, the Sandia Emergency Management Communications Center assesses the National Weather Service's weather forecast daily for weather impacts to site personnel, facilities and operations. The center uses the mass notification system to inform the workforce of hazardous weather conditions, like temperature extremes, high winds, flash floods and tornados. The system also monitors for and sends out notifications when lightning is within 10 and 20 miles of the main campus.

During extreme weather incidents, it may be necessary to implement certain protective actions to protect employees and equipment. Such protective actions may include but are not limited to: suspension of outdoor work activities, sheltering in place and avoiding flooded roadways and arroyos.

Superfuge test

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In a laboratory setting, the test created the harsh environments that weapons systems experience from launch to reentry through the atmosphere.

Sandia is the design and engineering lab for most nonnuclear components in the U.S. nuclear weapons stockpile. The nuclear security enterprise relies on Sandia for its sophisticated tests and computer models to qualify nonnuclear systems under its stockpile stewardship role. The Labs' work to modify and upgrade the stockpile through life extension and modernization programs ensures its safety, security and reliability.

Flight-like environments on full weapons system

Traditionally, engineers have simulated and tested each environment that weapons systems and components would experience — vibration, shock, spin and inertial load — separately. Over the years, Sandia has advanced these tests, developing capabilities to test more than one environment simultaneously.

"For the past decade, we've been running superfuge tests at Sandia, combining multiple environments. But we've really only done these tests on individual components and subassemblies," explained Paulina Rabczak, an engineer from Sandia/California working on the project.

"We've now successfully designed and built an extensive, large test fixture to support testing a full weapons system and put it through flight-like environments at the superfuge," she said. "This is possibly the closest we can get to replicating an actual flight reentry event on the ground."

By reproducing a flight environment in a lab setting, engineers can achieve test repeatability, further improving the reliability of test data and maturing hardware, said Paulina. This is expected to lead to decreased qualification time and associated costs.

The newly developed test, completed under NNSA's Office of Engineering and Technology Maturation, produces richer data and better insights and is a crucial step in advancing the qualification testing of weapons systems, explained Paulina. Qualification tests are used to validate weapons design and systems performance.

"Understanding the impact of combined environments to our weapons systems has proven very valuable as our engineers produce new designs," said Matt McDowell, an R&D engineer at the superfuge complex.

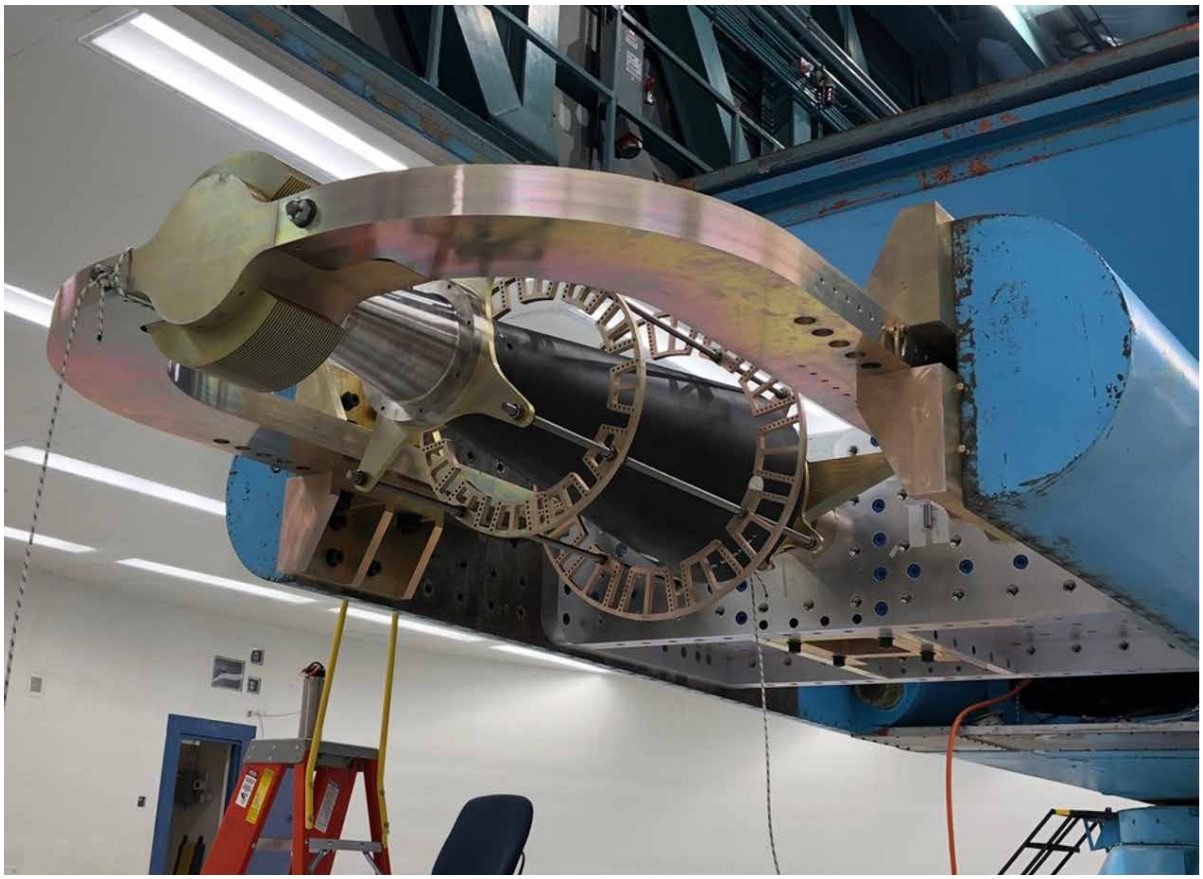
Advancing data collection

Collecting data from a superfuge test is technically challenging due to the large amount of data collected and the presence of multiple spinning joints, Matt said. Engineers use the data collected from environmental testing to inform and improve their designs.

To support the data collection requirements for the full-system combined-environments test, engineers developed an onboard data acquisition system, which collected data from more than 200 sensors on board the test unit.

The data collection system, designed jointly by telemetry and systems engineers at Sandia, rides along with the test unit, digitizing the analog data close to the test and encoding the data using SpaceWire and foundation bus protocols. Engineers were then able to pass hundreds of channels of digitized data across down the centrifuge arm across a digital slip ring — an approach that would not have been possible using the analog approach.

"We aim to build on the successes we had in this initial test and expand this capability to further benefit our other nuclear deterrence programs across the Labs," Matt said.



ACCELERATION, VIBRATION AND SPIN — An experimental test system is mounted on the centrifuge arm prior to combined-environments testing at the Superfuge/Centrifuge Complex. **Photo by Byron Demosthenous**

Flexing facility muscle

Planning, building reconfigurable Agile Lab is unique achievement

A SHARED SPACE — The new Agile Lab will offer 12,000 square feet of lab space and is set for occupancy by summer 2023. **Photo by Lonnie Anderson**

By **Valerie McKinney**

The recently completed Agile Lab in Tech Area I is unique at Sandia. No organization owns it, and researchers can reconfigure the flexible facility quickly when they need temporary lab space.

Completing the lab required a two-year effort by a broad planning and execution team from the facilities organizations.

It started with a trip strategic planner Malia Orell made in mid-2016 to the Aerospace Research Centre, part of the United Kingdom's Manufacturing Technology Centre. Sandia's Power Sources organization asked Malia to review the Centre's concept for flexible space and determine whether the British model would translate well to Sandia.

Designed to be reconfigured quickly for short-term projects, the Aerospace Research Centre was built quickly and relatively cheaply. The Sandia team wanted to model the Agile Lab after it, at a smaller scale. And the Power Sources group needed better space, including a backup dry room, a humidity-controlled area to process lithium-ion batteries.

Ultimately, their efforts resulted in a 15,840-square-foot structure, with about 12,000 square feet of lab space. The overall cost was $12.7 million, which was $500,000 less than estimated.

The Agile Modular Lab Facility is on track to achieve LEED Gold rating, which is a major accomplishment for an industrial building.

More demand than supply

Typically, demands for lab space from Sandia's multiprogram mission exceed availability. In addition, building age and construction type can limit or prevent repurposing space quickly, and renovations are costly. Facility modernization projects often require turnaround space during construction.

"There is nothing particularly extraordinary about the design of the building," Malia said, "but the concept of managing it with temporary occupancies is new to Sandia."

What's unique about the Agile Lab is that it lets Sandia programs think differently about how to use space, she said. No one owns the building, a marked change in thinking.

"Sandia can leverage this intentional flex space for short-term lab occupancy needs such as rapid changes in mission, recapitalization of aging facilities or a bridge to a longer-term investment strategy," Malia said.

"This concept represents a paradigm shift," said Alicia Brown, another strategic planner in facilities. "Rather than a custom-built, static lab building, the Agile Lab is intended to be an advanced high-bay shell that can flex and be reconfigured quickly as it houses temporary tenants."

The Power Sources group plans to occupy about three-fourths of the building's total lab space, which will reduce program risk for their battery production mission while they wait for a permanent home. They hope to identify funding and construct a permanent facility in five years so they can move from their current home, an aging and inadequate facility originally designed as a warehouse in 1949.

"Before the Agile Facility was conceived, there were no other viable options for them to temporarily stand up a reliable production dry room," said Malia. "This now serves as a stopgap to the longer-term investment strategy."

DOE funding

The Agile Lab can provide 12 high-bay lab spaces for occupants with various mission needs, including turnaround space for remodeling or renovations. It was built using Institutional General Plant Project funding from DOE and followed IGPP requirements.

The team hopes to use a similar IGPP process for future facilities built without a specific user in mind. To meet DOE/NNSA's criteria for IGPP funding, a project

must support multiple programs, cost less than $20 million and provide site-wide benefit while meeting other use requirements. Sandia planners emphasized providing benefits across multiple programs.

Construction was led by Thompson Construction Inc., a family-owned small business in its first project on the Sandia site.

Josh DeReu, Sandia construction manager for the project, pointed to TCI's attention to detail. "Despite the full COVID-19 posture for the duration of this project, there were no safety incidents," Josh said.

Staff from project and construction management and risk management worked with TCI on-site during the Labs' COVID-19-related maximized telework while other support functions worked remotely.

The building will be a high-bay laboratory only, as it doesn't meet design requirements for secure space. If needed, though, Sandia could build another facility for use by programs that require high security.

Next up: Geosciences Lab

Agile Lab is part of the NNSA's Standard Acquisition and Recapitalization Initiative program and can be replicated at other NNSA sites in the complex, including Sandia. The planned STAR Geosciences Lab will be a clone of the Agile Lab and will enable demolition of two of the oldest buildings on the site.

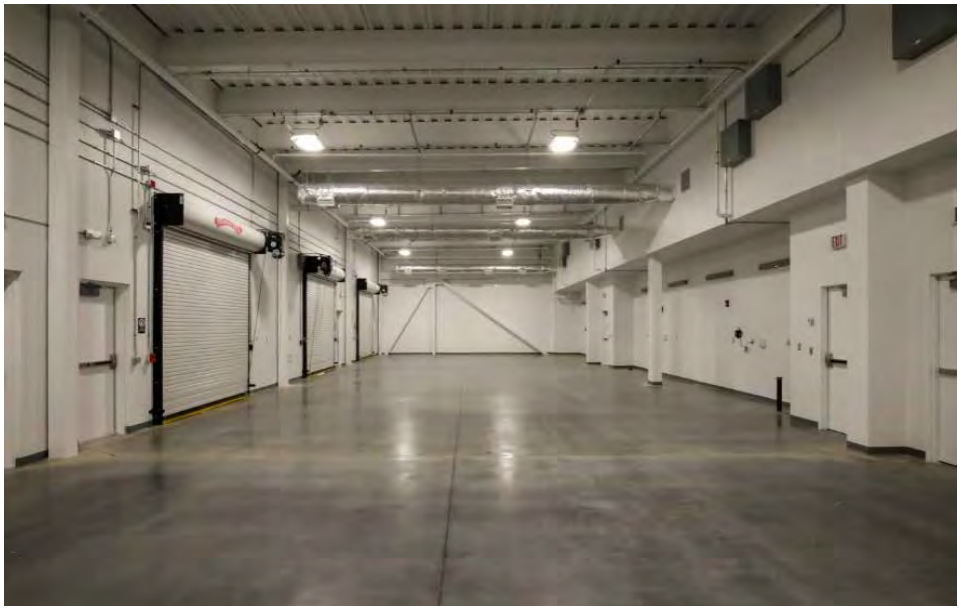
Each bay is 24 by 32 feet and 18 feet high. Each has independent roll-up door access and utilities, with independent power in case of planned or unplanned outages.

"The facility itself has been optimized to provide a blank canvas — a flexible environment — where a multitude of work can be performed," said planner Jeff Fleming.

Among the design features are a robust mechanical system that permits a variety of activities, electrical systems sized for future expansion and an over-designed roof that can accept additional equipment anywhere it's needed. The building also has a conference room, breakroom and restrooms.

Following the call for occupancy, the timeframe and square footage were evaluated and compared with each applicant. Each tenant will then fund and build out programmatic modifications for occupancy and then fulfill the required decommissioning at the end of tenancy.

FLEXIBLE AND FUNCTIONAL — The new Agile Lab offers 12 high-bay lab spaces for occupants with various mission needs. **Photos by Bret Latter**



BLANK CANVAS — Each bay at the new Agile Lab is 24 by 32 feet and 18 feet high, and has independent roll-up door access and utilities, including independent power in case of planned or unplanned outages.

Julie Kelly-Smith, a strategic capital planner, summarized the achievement. She said, "The planning process for this facility was a great opportunity for the planning group as well as the Labs. It allowed us to think about building allocation from a new perspective."

Associate Labs Director for Infrastructure Operations Harold Yeldell echoed that. "This new model benefits and serves the entire Lab," he said. "It's an unprecedented example of flexibility and adaptability for Sandia and its mission."

The building should be ready for occupancy by late summer 2023.

Sandia, Kansas City nuclear deterrence leadership visit California campus

Story by **Paul Rhien**
Photos by **Dino Vournas**

Nuclear deterrence leadership from Sandia and the Kansas City National Security Campus met at Sandia/California in June for facility tours and executive meetings with modernization program management. Managers had an opportunity to dialogue with the leaders at an afternoon meet-and-greet to share their perspective and input in the W80-4 suite.

CALIFORNIA CAMPUS TOURS — Sandia Associate Labs Director and Chief Systems Engineer Rita Gonzales, left, leads visitors from Kansas City National Security Campus on a campus tour at Sandia/California.

STRATEGY SESSIONS — Sandia Labs Director James Peery discusses ongoing efforts to strengthen collaboration with Kansas City National Security Campus.

PARTNERING TO DELIVER — Weapon modernization program managers participate in a meet-and-greet with leaders from Sandia's nuclear deterrence program and Kansas City National Security Campus.

Sandian Snapshot: Meet Michael Oberti

By **Andrea Sanny**

The first thing that drew Michael Oberti to Sandia was the mission.

"Transitioning from a startup, where you're just helping [retailers] take a piece of the pie to make money, to working on national security — it sounds cliché, but I feel like I'm doing something that actually matters."

Along with his desire to contribute to a greater cause, impacting others in a beneficial way has always been one of Mike's driving motivators.

"The reason I joined Abilities Champions of Sandia was to help other people," Michael said. "I haven't been super involved yet, but I have had some good conversations. That's one of the reasons why I want to go into management; I want to help grow folks. I always look at how can we get better at what we're doing, even if what we're doing is fine. If I can come up with a creative way to help others solve a problem, that motivates me."

In 2019, Mike was selected as the New Hire Champion acting manager, completing his term last year.

"I can't tell you how grateful I am to have [had] the opportunity to do that. We made some really positive improvements to the onboarding process, which we started [in 2020]. It was challenging to create face-to-face connections when everything was remote. It's hard to network remotely and create networks for folks without having the ability to walk into people's offices and say hi."

Invisible struggles

Mike's path was not always clear to him, especially in his early adult years.

"My parents divorced when I was eight years old. For various reasons, I don't have a lot of positive memories from when I was a child. My parents used my sister and me to get back at each other, which was never fun. I was naturally creative, but I struggled in school."

"I have learning disabilities. I can remember in kindergarten and first grade, my mom wanted to hold me back because I was having problems even back then. I struggled a lot. It wasn't until my sophomore year of high school that I learned that I had learning disabilities. I excelled in the sciences, taking classes like AP Physics, but did poorly in History and English classes."

MISSION DRIVEN — During his time as new hire champion at the California site, Mike Oberti appreciated contributing to a greater cause, helping others grow in their careers.

Photos courtesy of Michael Oberti

DRIVE AND MOTIVATION — When not at work, working on cars has always been a big passion for Mike.

NEED A TOW? — Continued education and self-improvement are guiding principles for Mike Oberti. Mike operated tow trucks before going back to school to become a systems engineer.



COVID HOBBIES — During the COVID-19 pandemic, Mike Oberti picked up a new hobby, building acoustic guitars.

Struggling to find his path forward, Mike spent time in community college before it all became too much.

"I eventually dropped out. After that, I went through a rough period for a few years before I turned it around and reset my trajectory in my early 20s when I got a job driving a tow truck. I became enamored with the idea of towing big rigs. So, I set a goal to become the youngest heavy-duty tow truck operator. A goal I wanted to achieve, rather than what people expected me to do."

After a few years operating the tow trucks, he decided to go back to school to become an engineer. While continuing to drive the tow truck on the weekends, he recommitted to community college and eventually transferred to Santa Clara University and started its 5-year graduate program. To his surprise, he excelled academically.

"It was different because I was doing something that lent itself to my strengths by going to the engineering world. There was a lot of drive and motivation; it was the first time ever I was getting A's and B's in my classes, being on the dean's list and honor roll. I was doing that despite my disability."

Up until this point, Mike had avoided taking advantage of any services to help with his learning disability, preferring to avoid talking about it. But when he transferred to Santa Clara, he was concerned and applied for assistance with the disability resource center.

"I think it would have been difficult without it. I graduated with honors and moved on. I'm proud of having my blue-collar roots and not taking the traditional college path. It provides a lot of perspective that I think you wouldn't normally get," Mike said.

"I don't think I'm fully comfortable talking about it now, but I think you get more comfortable by talking about it. It's hard because they call these invisible disabilities, and people wouldn't know unless they pick up on my weird mannerisms. Most people don't get it, but it's not something that goes away. Things that come naturally to most people, don't come naturally to me. I'm not upset about it; these are just the cards I was dealt."

Mike now hopes to use his success and voice to spread awareness of these types of disabilities.

"If I was able to do it, I believe others with similar disabilities can do it as well."

Never stop learning

Along with his passion for helping others grow in their careers, Mike also spends time focusing on self-improvement.

"I don't miss my commute [to Sandia], but I owe a lot of my success to it. The time in the car provided me the opportunity to listen to audiobooks on leadership, psychology and self-improvement. I am a lifelong learner; I want to always be inquisitive, understand and constantly make myself uncomfortable intentionally. It's important to understand yourself before you can really start understanding other people."

Many of these lessons have impacted the way he does his job and the way he interacts with other employees at Sandia.

"I try to be conscious of my communication style and how other people perceive it. It's not that I'm good at it, but I try to be mindful of it. Being okay with making mistakes, being humble; it's okay to show vulnerability. I think it's how you connect with other people. I tried to do that in my acting role and do things that I normally wouldn't do."

Another way that he stays inspired is through his document of motivational quotes, which he uses as his Skype status.

"A couple of them are: 'Problems rarely exist at the level at which they are expressed.' 'The key to winning is poise under stress.' This is something I constantly work on: how can I remain calm and focused given my physiological responses to stress and anxiety?"

Hobbies during COVID-19

"One of the things I try to do, as I grow older, is downselect my hobbies. I have way too many interests and spread myself too thin. Honestly, I like to spend time with my family. As far as hobbies go, I love working on cars. Obviously, time and money have a lot to do with whether I can execute on that."

During the pandemic, Mike picked up a brand-new hobby that he's been putting a lot of time into.

"My current hobby is building acoustic guitars. I recently got a little CNC router, so hopefully, I can work with my kids. My older son is starting to tinker with it and I'm excited to help him work through something in Fusion 360."